



Computer Fourth Wave

Server Centric Computing



Stephen Roche

Economist Morgan Stanley

“The Vision of ‘The Third Wave’ (Alvin Toffler) is untrue -- for our billions of dollars invested in Information System, we have seen zero increase in knowledge worker productivity”

GLOBAL ECONOMIC FORUM

MORGAN STANLEY



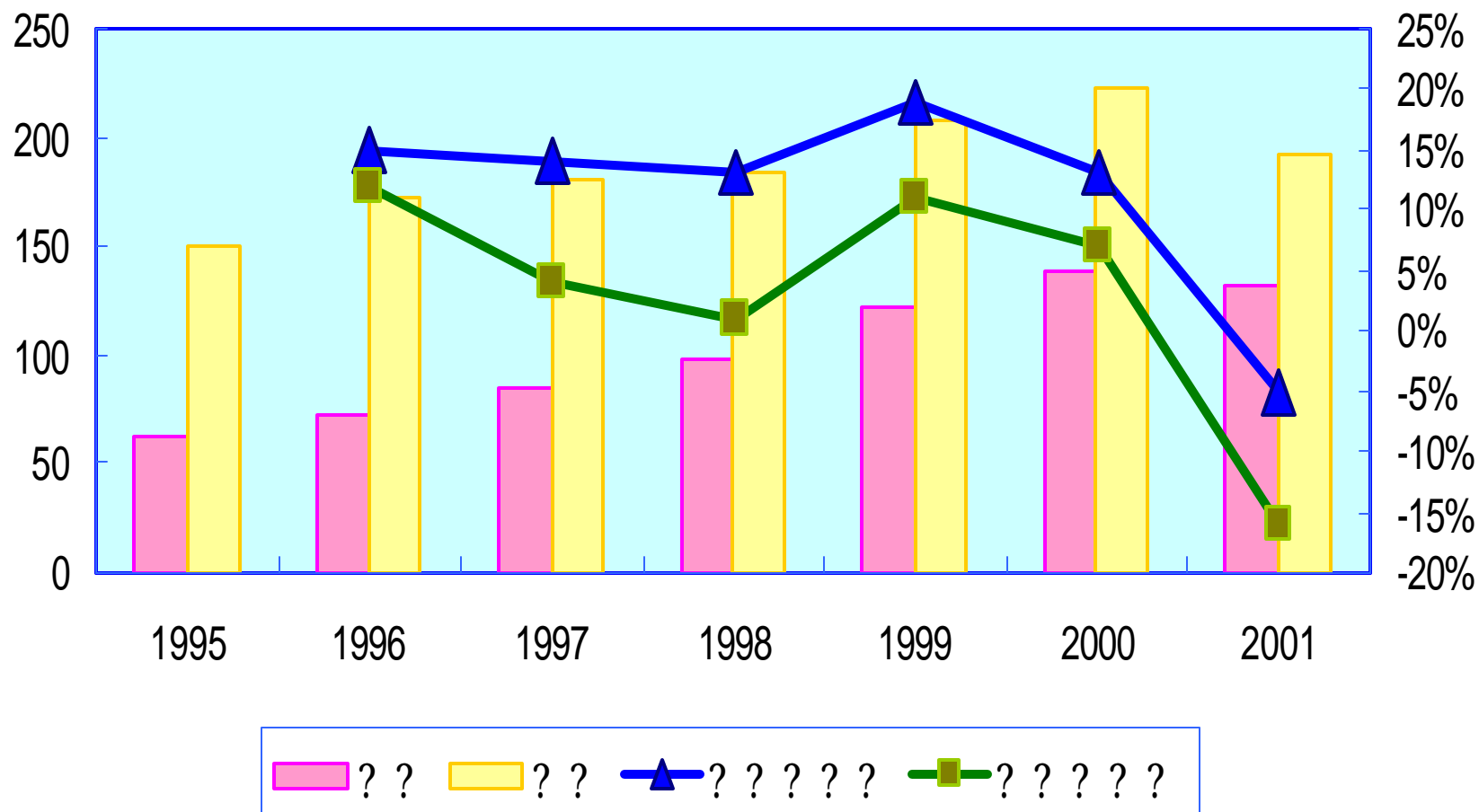
Gartner

Awareness of terrorism after the Sept. 11 terrorist attacks will drive thin-client deployments for continuing operations and data security, particularly in financial services and federal government sectors. Another major driver is the avoidance of upgrading PCs to Windows XP. Enterprises resenting Microsoft's continuous upgrade practices view thin-client deployment as an attractive alternative

“At least 20 percent of thin-client shipments will be based on high-end XP Embedded devices to support rich browser-based and multimedia applications.”

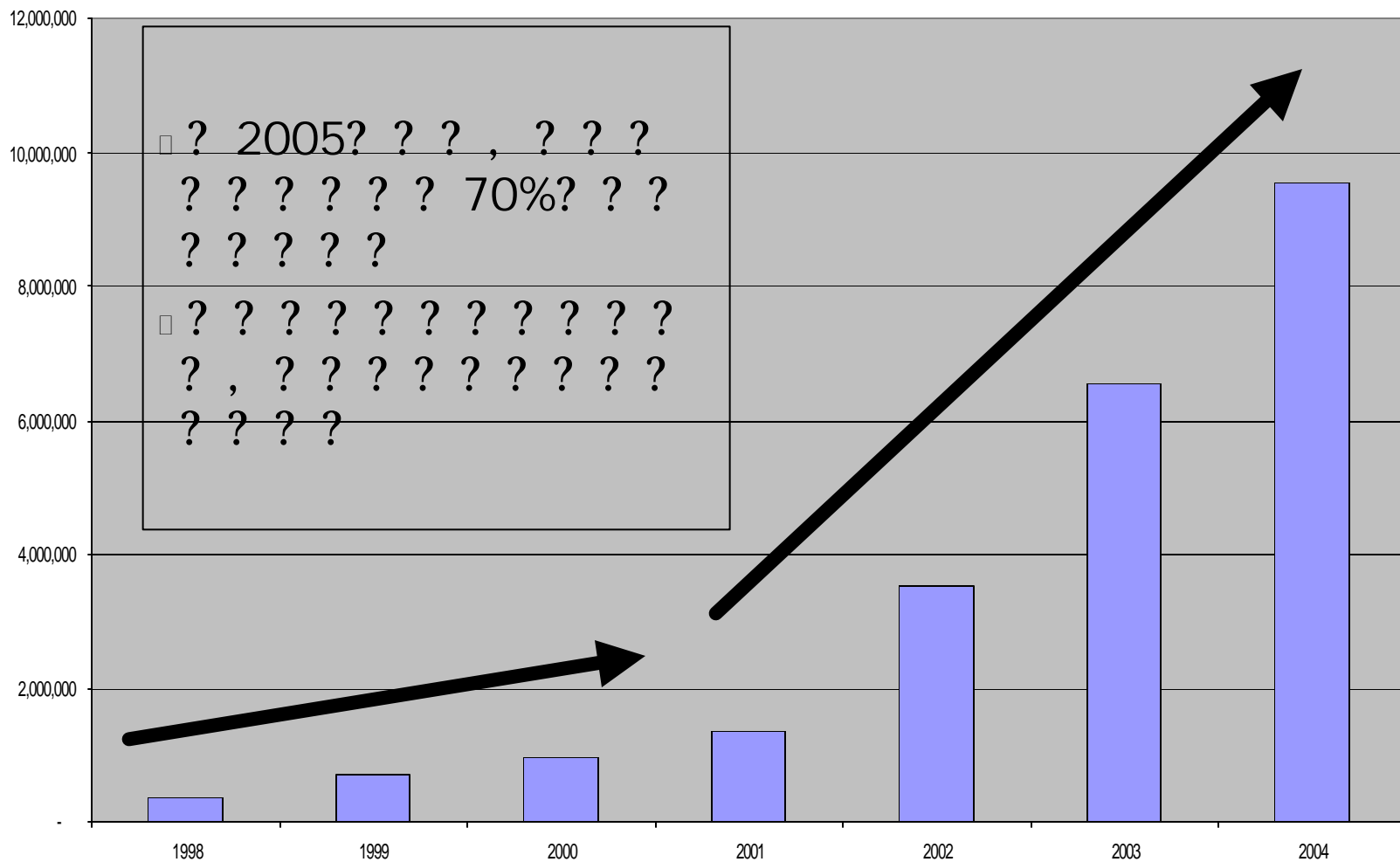
Source From: Gartner Research 17 Dec. 2001

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Source: Merrill Lynch July 2001

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Source: IDC #21697 and Microsoft 1/30/01 release

Thin-client desktop device shipments will increase by 50 percent in 2002.

We recommend thin client deployment where it is technically appropriate and culturally feasible. Microsoft and Citrix will continue to dominate Windows Terminal Server deployments, but there are opportunities for others to add value for lower cost than Citrix. From a hardware perspective, Wyse will increase its share of the Windows terminal hardware market.



Bill Gates mentioned WYSE in his eHome presentation at CES on Jan. 9. 2002

Microsoft Chairman Bill Gates is expected to show off the device, known as Mira, during his eHome presentation Monday at the Consumer Electronics Show in Las Vegas.



Bill Gates speaks on three topics at the Show . One is **Win CE.net** (Wyse is shown), Second is **Mira** (Wyse is featured and Bill G says "Wyse"), and third is **Xbox**.

1997: BillG Describes the Windows-based Terminal



- "... we now have the Windows-based Terminal.
- With a thin client, a truly thin client, the RAM issue never comes up, because you don't have local execution.
- That's why the Windows-based Terminal is the only truly thin client."

Microsoft new vision statement:

*"To empower people through great software -
any time, any place and **on any device.**"*

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THE INDEPENDENT GUIDE TO TECHNOLOGY JANUARY 15, 2002

BEST

PRODUCT

FOR 2002

thin-client technology

Turning PCs into not-so-dumb terminals may be one of the smartest moves you can make when it comes to planning for disaster recovery. There are many advantages to this type of environment, known as thin-client or server-based computing, including lower hardware costs and easier management. And its built-in facility for disaster recovery can make it an invaluable tool for minimizing employee downtime when your network and its PCs are unavailable.

With a thin-client system, the client sends keystrokes and mouse movements to the server over the network or dial-up connection, and the server sends back changes in the display. Any PC can be a client, but because very little processing is performed at the desktop, businesses can also use low-cost terminals that have no moving parts (no hard drive) and a generally small amount of memory (RAM).

Since each client is just a terminal, all data and settings—and even the applications—are on the server. To back up everything for all the users, you need only back up the server. And for disaster recovery, backups are easier and more centralized, making it easier to take your backups off-site.

Imagine a worst-case systems disaster in which your clients and servers are lost. You must restore your backups on other servers.

Ideally, you should move to a mirrored server setup in which you can use the same server and domain names; in this case, your clients should be able to connect and continue as if nothing had happened. But many companies want to maintain an expensive set of parallel servers. If you have the ability to restore your backups to a different server configuration, you may need to write some new log-on scripts, but because all the computing is server-based, you should be able to make the changes easily.

The two leading thin-client platforms are **Citrix MetaFrame** (MetaFrame/Workgroups 1.8 for Windows 2000 Server, for 5 users, \$2,000 street; for 15 users, \$5,000; www.citrix.com) and **Microsoft Windows Terminal Server** (Windows 2000 Terminal Services, for 5 users, \$750; for 20 users, \$2,670; Terminal Services Internet Connector License, for 200 concurrent users, \$10,000; www.microsoft.com). MetaFrame makes disaster recovery easier by letting you join multiple servers—even geographically dispersed servers—into a server farm. If some servers go off-line, the others pick up the load, thus providing load balancing and server redundancy. Of course, when the fall-back servers are connected across a slow connection, this configuration won't suffice.

Since client machines are not doing any processing, disaster recovery for them is easy. You can install the client software on any PC, even one that is underpowered by modern standards, and it will be an acceptable thin client. If you run a Windows PC thin client, such as one of the many different models available from Wyse, setup doesn't even require configuring Windows, although you must provide the server's IP address. Many products have management software (such as **Wyse Rapport**, custom pricing; www.wyse.com) that automates the configuration of these devices.

We tested thin-client devices from several vendors in our April 4, 2000, story "Thin Is Back," and we especially liked the **IBM NetWork Station 2200 and 2800** (\$630 and \$820 street, respectively; www.pc.ibm.com/us), the **Neoware NeoStation 2300 and 3000C** (\$540 and \$400 respectively; www.neoware.com), the **Sun Ray 1** (\$400; www.sun.com), and the **Wyse Winterm 3630LE** (\$850). The Neoware and Sun products both received our Editors' Choice for that story.

Another highlight of thin-client computing is that it is designed for remote-access workers, making it ideal for disaster recovery. If your company's employees need to work remotely for a period of time (either from some other office or even from home), they can do so easily and seamlessly with thin-client systems. You don't even need to install client software on their systems; you can set up a Web page using an ActiveX control or Netscape plug-in that connects to the server, which will require some programming with Terminal Server. Fortunately, **Citrix Nfuse** (free download, www.citrix.com) easily creates application links inside Web pages.

126 PC MAGAZINE JANUARY 15, 2002 www.pcmag.com

WYSE
WT3630LE

Thin Client Technology

From Vision to Reality

VTF 2002
VIA Technology Forum



THE BEST PRODUCTS OF 2002

Thin-Client Technology- WT3630LE

PC Magazine points out:

Thin Client or server computing, including lower hardware costs & easier client management.

No moving parts and a generally small amount of memory, for disaster recovery, backups are easier and more centralized, making it easier to take back ups off-site.

Source: PC Magazine Vol.21

All things Thin

- We're surrounded by a new wave of thin flash-based devices – some more obvious than others



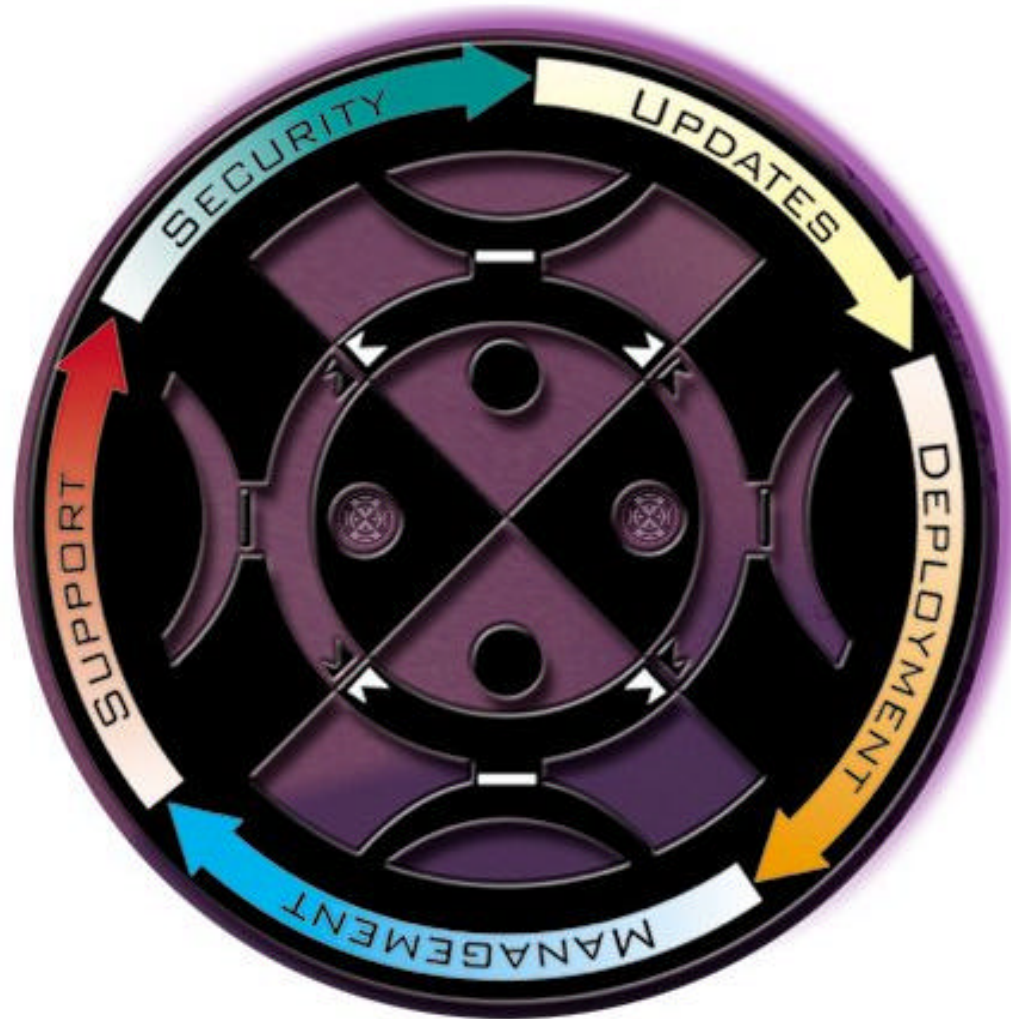
From Vision to Reality

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1. Connect Any Time Any Where
 2. Information Roaming
 3. Information Integrity
 4. Information Deploy
 5. Device Management

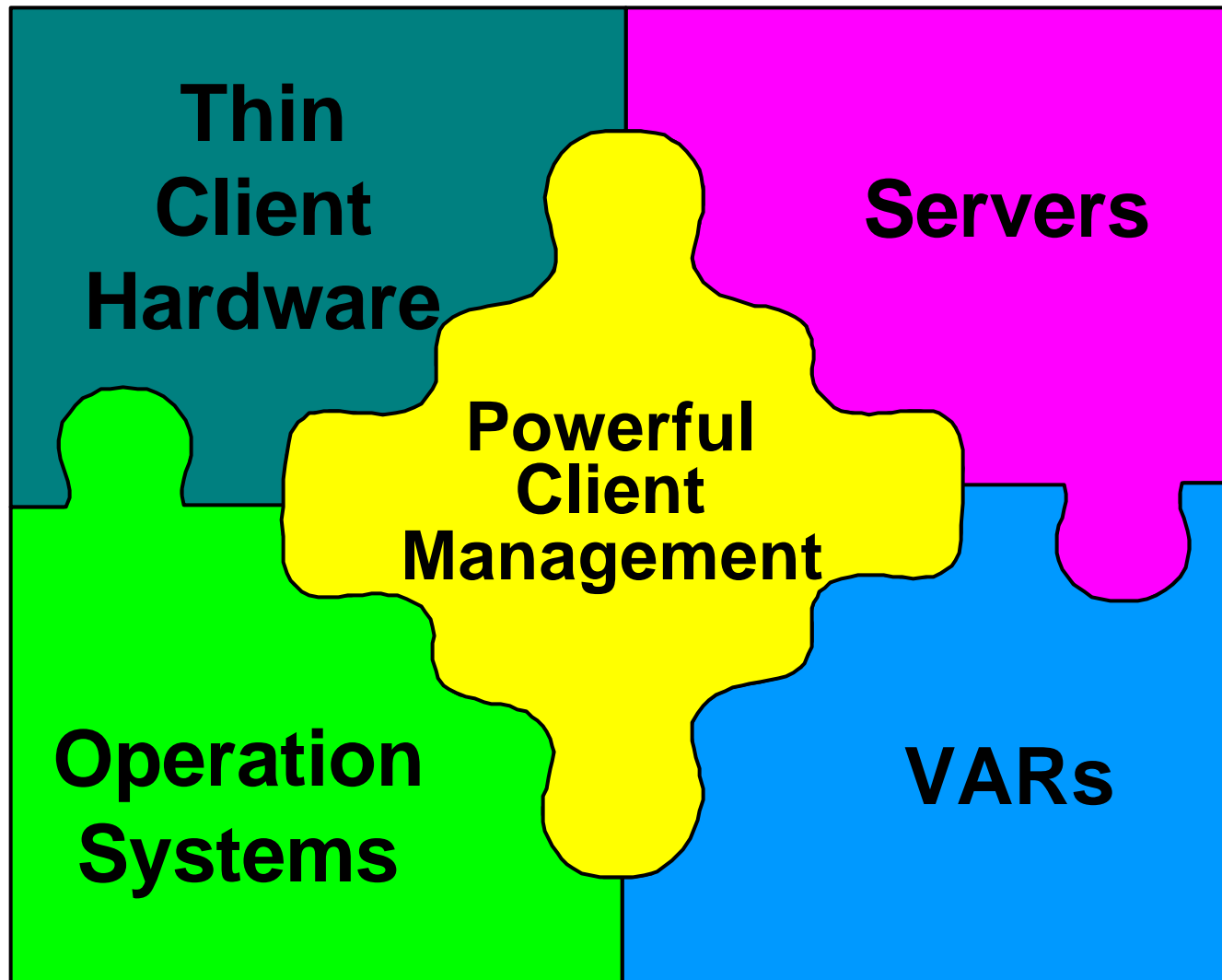
From Vision to Reality

Rapport Administrative Software



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Management is Key



From Vision to Reality

Internet Appliance Environment

ODM's

(Device Suppliers)

**IA
Users**

Telcos

(Infrastructure Providers)

Portals

(Content Providers)

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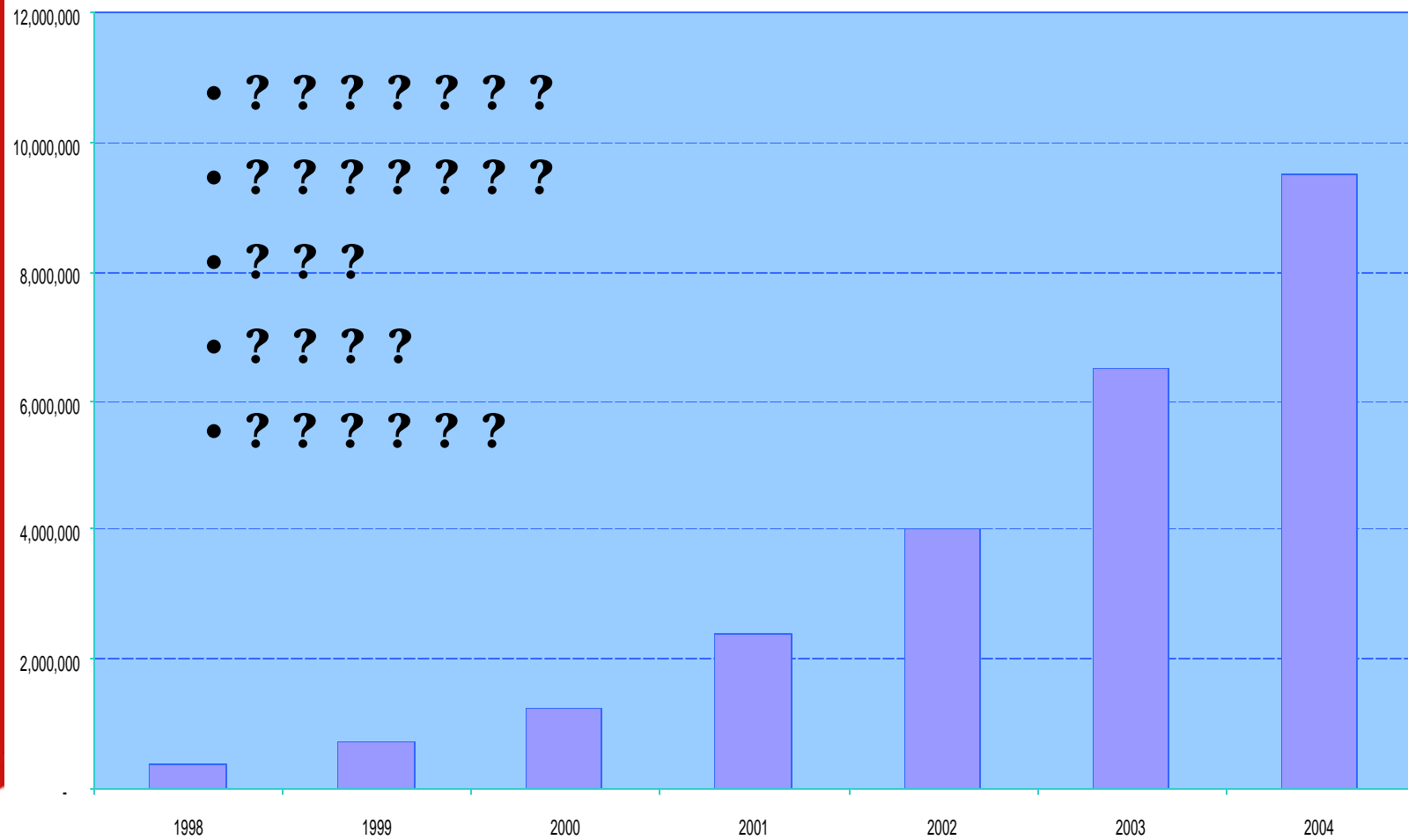


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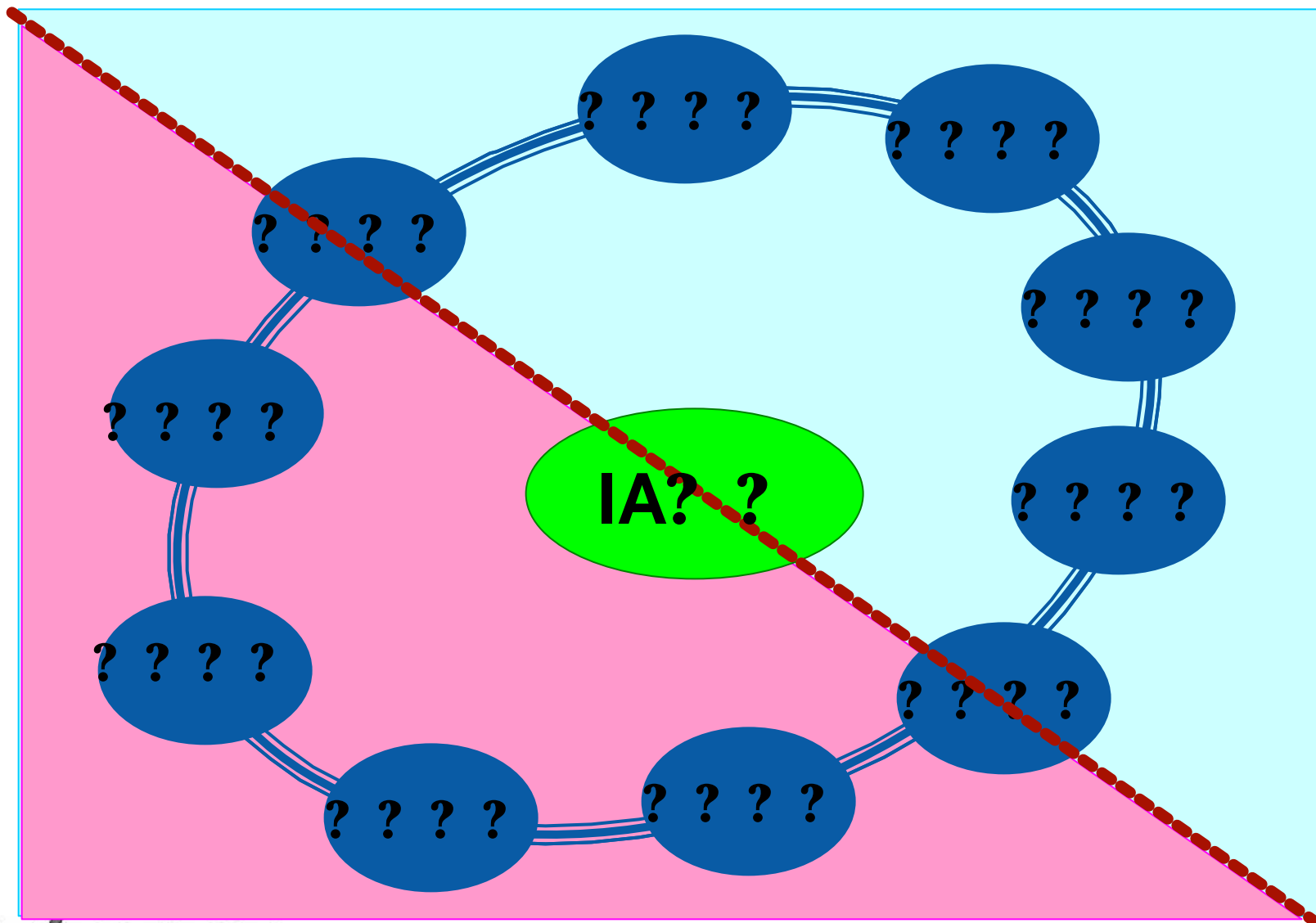
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From Vision to Reality

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From Vision to Reality

From Vision to Reality



Lemon Grove School District

Lemon Grove School District

The Lemon Grove School District, with eight schools that serve 4,600 students in grades K through 8, supports 26,000 residents in a low-income community located near San Diego.



The Challenge

- ✍ Tight budgets to a mix of client devices-that rival any industry.
- ✍ The educational challenges typical in lower-income communities, with 68 percent of district students qualifying for free or reduced lunches, a measure of poverty.

WYSE Thin-Client helped to Create a Connected Learning Community

- ✍ Six elementary school
- ✍ Two Middle School
- ✍ Student Homes
- ✍ Town Library
- ✍ Senior Center
- ✍ Recreation Department
- ✍ Community Centers
- ✍ Teen Center
- ✍ Fire Department
- ✍ Public Works
- ✍ City Hall



Linked by 2000 units Winterm

WYSE Thin Client Solution

- ✍ Double the number of students who have computer access
- ✍ Also reduced the district's IT support costs by 50 percent
- ✍ Improved the performance of educational applications by 60 percent



"In the education business, it's all about getting the most bang for your buck. With the Wyse thin-client solution, we are able to reach nearly twice as many students. And teachers no longer have to play the dual role of IT person and educator."

Darryl LaGace

***Director of Information Services, Lemmon
Grove School District***

